



The Regional Biomass Energy Program (RBEP) promotes increased production and use of bioenergy resources, and helps advance the use of renewable biomass feedstocks and technologies. Historically, the RBEP leverages two nonfederal dollars for every federal dollar it administers.

Benefits of E85 Fuel

- **Increases use of bio-based fuel derived from 80% renewable resources**
- **Lower toxicity than methanol or gasoline**
- **Reduces greenhouse gas emissions by 30%**
- **Reduces fossil energy use on a per-mile basis by 42%**
- **Reduces risks associated with transportation of petroleum products**
- **Degrades faster in the event of a spill**

“Switching to an ethanol fueling program has been very beneficial for Mammoth Cave National Park. We have been able to make a positive impact on air quality in the park without sacrificing vehicle performance. If the needed vehicles and a fuel supplier are available, fleet managers should not hesitate to make the switch to ethanol.”

Mark Davis, Fleet Manager
Mammoth Cave National Park



**U.S. Department
of Energy
Regional Biomass
Energy Program**

www.ott.doe.gov/rbep

ANOTHER RBEP SUCCESS: Bringing “green machines” to national parks, part 3: ethanol-fueled vehicles

CHALLENGE

Many U.S. national parks have serious air pollution problems, Mammoth Cave National Park in Kentucky among the worst. In 1995, officials at Mammoth Cave began exploring fuel alternatives to gasoline for the park’s vehicles, including propane, compressed natural gas (CNG), and electricity. Due to the expense of obtaining such alternative-fuel vehicles and potential refueling difficulties, management at Mammoth Cave determined that none of these technologies would be feasible.

Flexible fuel vehicles (FFVs) offered another possible solution. Capable of running on either a bio-based 85% ethanol-15% gasoline (E85) fuel, or straight gasoline, FFVs have great potential for use in environments where E85 fuel is available. In 1998, the Kentucky Corn Growers Association approached the management of Mammoth Cave National Park about the possibility of installing an E85 fueling station in the park.

RBEP SOLUTION

With funding from the U.S. Department of Energy’s Regional Biomass Energy Program (RBEP) and the National Ethanol Vehicle Coalition, Mammoth Cave National Park purchased an above-ground fuel tank and



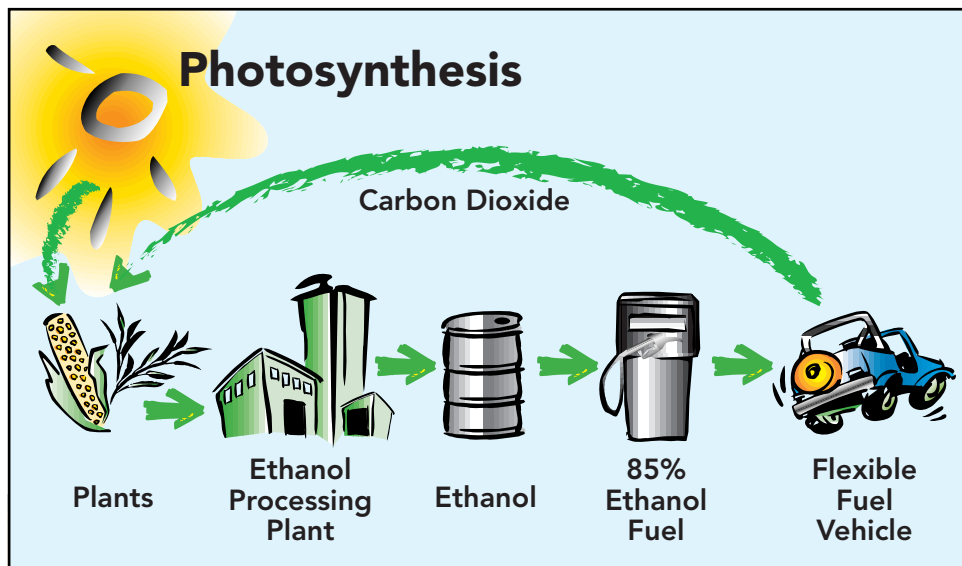
equipment to construct an E85 fueling station. The park also rented an E85 vehicle from the General Services Administration (GSA) and arranged to rent additional E85 vehicles as existing vehicles came due for replacement. These vehicles could be run on either E85 or unleaded gasoline at a reasonable cost.

Using an existing concrete pad, park staff installed a 3,000-gallon, steel, above-ground tank and necessary pumping equipment at a cost of just over \$22,000. The National Ethanol Vehicle Coalition helped purchase the equipment and coordinate the first E85 delivery.

Partners

U.S. Department of Energy
Regional Biomass Energy Program
Mammoth Cave National Park
U.S. Department of the Interior
National Ethanol Vehicle Coalition
Kentucky Corn Growers
Association
Kentucky Corn Promotion Council
Tennessee Valley Authority

Unlike petroleum fuel, ethanol produces virtually no net carbon emissions when used as fuel. The carbon emissions are “recycled” for use by biomass feedstocks during photosyntheses.



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RESULTS

Although miles per gallon are typically slightly lower with E85, overall performance of the flexible fuel vehicles using the E85 fuel has been comparable to what had been achieved using conventional gasoline. In the time since the program began, Mammoth Cave National Park's fleet of E85-compatible vehicles has grown to 33% of the total fleet. Whenever possible, future additions to the fleet will be E85-compatible.

The park originally obtained E85 fuel from a supplier in Bloomington, Illinois, but is now purchasing it locally, benefiting corn farmers in the region.



(Photo courtesy of National Park Service)

BENEFITS

When the project began, Mammoth Cave National Park had serious air quality problems. By migrating to a new primary vehicle fuel source, park officials are taking positive steps to improve air quality, reduce dependence on foreign oil, and support the local farm economy.

The Mammoth Cave National Park E85 Project provides an excellent example of cooperation between several non-profit organizations and two agencies of the federal government. Through this partnership, scarce financial resources were acquired to assist with implementing an important alternative fuel vehicle program.

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